

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: CS366

Course Name: NATURAL LANGUAGE PROCESSING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|---|--|-----|
| 1 | Explain why CFG is used to represent natural language in parsing | (3) |
| 2 | For each sentence, identify whether the different meanings arise from structural ambiguity, semantic ambiguity or pragmatic ambiguity?
1. <i>Time flies like an arrow</i>
2. <i>He crushed the key to my heart</i> | (3) |
| 3 | Identify the morphological type (Noun phrase, Verb Phrase, Adjective Phrase) of following sentence segments
1. <i>important to Bill</i>
2. <i>looked up the tree</i> | (3) |
| 4 | Describe augmented grammar in syntactic analysis | (3) |

PART B

Answer any two full questions, each carries 9 marks.

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| 5 | Explain POS tagging with example | (9) |
| 6 | a) Distinguish between semantics, pragmatics and discourse
b) Describe open class words and closed class words with examples | (5)
(4) |
| 7 | a) Differentiate between different morphemes, with examples.
b) Explain lexicon, lexeme and the different types of relations that hold between lexemes | (4)
(5) |

PART C

Answer all questions, each carries 3 marks.

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| 8 | Explain the role of selectional restriction in semantic interpretation | (3) |
| 9 | Distinguish between bounded movement and unbounded movement and give examples. | (3) |
| 10 | Explain how ambiguity is encoded in logical form language | (3) |

- 11 Perform parsing using simple top down parsing for the sentence “The dogs cried” using the grammar given below: (3)

S->NP VP

NP->ART N

NP->ART ADJ N

VP->V

VP->V NP

PART D

Answer any two full questions, each carries 9 marks.

- 12 a) Map the following CFG into an equivalent RTN that uses only 3 networks- an S, NP and PP network. Make your network as small as possible. (5)

S->NP VP

VP->V | V NP | V PP

NP-> ART NP2 | NP2

NP2-> N | ADJ NP2 | NP3 PREPS

NP3-> N

PREPS->PP | PP PREPS

PP->NP

- b) Discuss the differences between ATN and RTN (4)

- 13 The parse tree for the sentence “A restaurant serves dosa” is given below. (9)

Perform semantic analysis and show the semantic interpretations of the constituents. Explain the process



- 14 a) Explain the use of modal operators in logical form language and explain how it suffer from the failure of substitutivity (5)

- b) Between the words eat and find which would you expect to be more effective in selection restriction-based sense disambiguation. Explain. (4)

PART E

Answer any four full questions, each carries 10 marks.

- 15 a) Explain the different types of inferences (5)
b) Write FOPC for the following sentences: (5)
All cats and dogs hate each other
I arrived in New York.
- 16 Explain vector space model of information retrieval (10)
- 17 a) Explain surface anaphora and the different methods for dealing with surface anaphora (5)
b) Explain the difference of discourse structure from other reference mechanisms (5)
- 18 a) Describe transfer model of Machine Translation. List out its three phases (5)
b) Explain direct machine translation (5)
- 19 Explain text summarization and multiple document text summarization with neat diagram (10)
- 20 Describe different ways of building belief models in a conversational agent (10)
